CODE OF MASSACHUSETTS REGULATIONS
TITLE 522: BOARD OF BOILER RULES

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522 CMR 1.00: GENERAL PROVISIONS

1.01: Scope and Authority

(1) Pursuant to M.G.L. c. 146, § 2, the Board shall formulate or adopt rules formulated by a recognized engineering organization for the construction, installation and inspection of steam boilers and power reactor vessels and piping as used in atomic energy installations and for ascertaining the safe working pressure to be carried therein; prescribe tests, if it deems it necessary, to ascertain the qualities of materials used in the construction of boilers, power reactor vessels and piping; formulate rules regulating the construction and sizes of safety valves for boilers of different sizes and pressures, appliances for indicating the pressure of steam and the level of water in the boiler or power reactor vessel, and such other appliances as the Board may deem necessary to safety in operating steam boilers or power reactor vessels; and make a standard form of Certificate.

(2) Pursuant to M.G.L. c. 146 § 35, the Board shall prescribe regulations conforming to recognized standards of engineering practice for the size, shape, construction, gauges, operation, maximum pressure, safety devices, use of oil, and other appurtenances necessary for the safe operation of tanks or other receptacles used for the storing of compressed air.

(3) Pursuant to M.G.L. c. 146 § 43 and 45A, the Board shall adopt rules for the size, design, location and piping of safety valves on ammonia compressors, refrigeration and air conditioning systems.

(4) Pursuant to M.G. L. c. 146 § 70 & 71, the Board shall adopt rules for the construction, installation and inspection of all hot water heating boilers.

(5) All reconstruction must conform to the original stamped code of construction for all boilers and Pressure Vessels covered by this regulation

(6) The Board shall hold public hearings annually on the first Thursday in May and November, and at such other times as it may determine, on petitions for changes in the rules formulated by it. If, after any such hearing, it shall deem it advisable to make changes in said rules, it shall appoint a day for a further hearing, and shall give notice thereof and of the changes proposed by advertising in at least one newspaper in each of the cities of Boston, Worcester, Springfield, Fall River, Lowell and Lynn, at least ten days before said hearing. If the Board on its own initiative contemplates changes in said rules, like notice and a hearing shall be given and held before the adoption thereof. Pursuant to M.G.L. c. 146, § 4, any changes in the regulations that affect the construction

of new boilers must take effect six months after their filing. The Board may allow the new construction requirements to apply to boilers constructed during that six month time period.

1.02. Definitions. The following words and terms, when used in 522 CMR, shall have the following meanings:

Alteration. A change in the item described on the original Manufacturer's Data Report which affects the pressure containing capability of the pressure-retaining item. Nonphysical changes such as an increase in the maximum allowable working pressure (internal or external), increase in design temperature, or a reduction in minimum temperature of a pressure-retaining item shall be considered an alteration pursuant to the NBIC.

ANSI. American National Standards Institute

Approved Nationally Recognized Testing Laboratory. A laboratory that is acceptable to the Board and provides uniform testing and examination procedures and standards for meeting design, manufacturing, and factory testing requirements of ANSI/ASHRAE 15; is organized, equipped, and qualified for testing; and has a follow-up inspection service of the current production of the listed products. (Pursuant to ANSI/ASHRAE 15-2010)

Appurtenance. A component or piping added to a boiler/Pressure Vessel, necessary for the proper operation.

ASHRAE. American Society of Heating, Refrigerating, and Air-Conditioning Engineers.

ASME. American Society of Mechanical Engineers.

Authorized Inspector. An employee of an authorized insurance company holding a Certificate of Competency as a boiler inspector, issued to them by the Department to perform shop inspections, reconstruction/repair inspections and field inspection of boilers within the Commonwealth. All Authorized Inspectors shall also hold a valid and current National Board Commission.

Authorized Manufacturer (Refrigeration and Air Conditioning Systems). A manufacturer which holds a certificate of authorization to use the appropriate ASME Code Stamp to build pressure vessels for use in the Commonwealth of Massachusetts.

Authorized Manufacturer (Heating Boilers). A boiler manufacturer which holds a certificate of authorization to use the ASME Code "H" or "U" stamps.

Authorized Manufacturer (Steam and Hot Water Boilers and Heat Storage Sources). A boiler manufacturer which holds a certificate of authorization to use the ASME Code "H", "S", or "U" stamps.

Authorized Nuclear Inspector. Holds NBIC Commission with a nuclear endorsement (N).

Authorized Nuclear Inspector (Concrete). Holds NBIC Commission with a nuclear endorsement (C).

Board. The board of boiler rules appointed under M.G.L. c. 22 § 10.

Boiler. A closed pressure vessel in which water is heated, steam is generated, steam is superheated or any combination thereof, under pressure or vacuum for use externally to itself by the direct application of heat from the combustion of fuel, or from electricity or nuclear energy. The term "Boiler" shall include fired units for heating or vaporizing liquids other than water where these units are separate from processing systems and are complete within themselves. The term "Boiler" shall include unfired pressure vessels where steam is generated by a source of heat other than from the direct application of heat from the combustion of fuel, or from electricity or nuclear energy, (for example, clean steam generators that use steam or high temperature hot water as the energy source).

Certificate. Certificate of inspection issued by the Department of Public Safety.

Certificate of Competency. Certificate issued by the Department to individuals who have satisfactorily passed the boiler inspector's examination prescribed by the Department, giving said individuals a Certificate of Competency to inspect boilers, its appurtenances and all other devices prescribed under Massachusetts General Law Chapter 146.

Chief. The Chief of Inspections - Mechanical for the engineering division in the Department of Public Safety.

Commissioner. The Commissioner of Public Safety.

Deaerator. A pressure vessel classified as a heat storage source that uses steam to remove oxygen and carbon dioxide from boiler feedwater.

Department. The Department of Public Safety.

District Engineering Inspector. An inspector of the Division.

Division. The division of inspection of the Department of Public Safety.

Engineer in Charge. A person who holds a valid and current Massachusetts Engineer's or Fireman's license issued by the Department, and is designated by the Owner/User as the "Engineer in Charge" and who is in actual authority for:

(a) The daily operation and maintenance of the steam boilers or engines specified and;
(b) All persons operating these boilers or engines.

External Inspection. An operational inspection of a boiler. The inspection should test all operating and safety controls that have the functionality and design to be tested, as well as observing the general overall external condition.

First Inspection. An inspection of a boiler, pressure vessel, heat storage source, refrigeration system, air tank, that has, regardless of its age or installation date, never before been inspected by a District Engineering Inspector or an Authorized Inspector. Pursuant to M.G.L. c. 146 § 6, a District Engineering Inspector shall perform a First Inspection of all steam boilers and air tanks that were installed after September 13, 1977.

Gas Turbine. A device using combustion gasses directly in a turbine. The basic components of a gas turbine consist of a compressor, combustor and turbine. Fuel used in a gas turbine is natural gas, high quality fuel oil, synthetic gas or liquefied coal.

Heat Storage Source. A potable water heater or water storage tank constructed to Section IV and Section VIII of the ASME Boiler and Pressure Vessel Code, respectively, or a Deaerator.

High Pressure. Water at pressures exceeding one hundred sixty (160) PSIG or temperatures exceeding two hundred fifty (250˚) degrees Fahrenheit, or a steam boiler at pressures exceeding fifteen (15) PSIG.

Internal Inspection. A thorough inspection that is performed on a boiler water and fireside, when the boiler is not operating and is open, in accordance with the NBIC.

Low Pressure. A steam boiler at pressures not exceeding fifteen (15) PSIG, or a hot water at pressures not exceeding one hundred sixty (160) PSIG or temperatures not exceeding two hundred and fifty (250˚) degrees Fahrenheit.

Machinery Room. A space, meeting the requirements of Section 8.11 and 8.12, that is designed to house compressors and pressure vessels pursuant to ANSI/ASHRAE 15-2010.

Massachusetts Heat Boiler. A steel plate boiler built by an authorized manufacturer in accordance with Section IV of the ASME Code but not stamped with the Code symbol.

Minimum Allowable Thickness. The minimum thickness permitted in accordance with the provisions of the applicable section of the original code of construction.

National Board. The National Board of Boiler and Pressure Vessel Inspectors.

National Board Commissioned Inspector. An inspector employed by an authorized insurance company who holds a valid and current National Board Commission, or such other individuals who hold a valid and current National Board Commission.

NBIC. National Board Inspection Code 2011

Operator. The person who operates the vessel.

Owner/User. Any person, firm or corporation legally responsible for the safe operation of any pressure-retaining item pursuant to NBIC.

Pressure Vessel. A vessel in which the pressure is obtained from an external source or by the application of heat from an indirect source or from a direct source, other than a vessel defined as a "Boiler" in this section.

Reportable Accidents/Incidents. Accidents or incidents that result in Serious Injury/Illness or damage exceeding $10,000 per incident.

Refrigerating System. A combination of interconnected parts forming a closed circuit in which refrigerant is circulated for the purpose of extracting, then rejecting, heat.

(a) Absorption System. A refrigerating system in which the gas evolved in the evaporator is taken up by an absorber or adsorber.

(b) Sealed Absorption System. A unit system or Group 2 refrigerants only, in which all refrigerant-containing parts are made permanently tight by welding or brazing against refrigerant loss.

(c) Self-Contained System. A complete, factory-assembled and factory-tested system that is shipped in one or more sections and has no refrigerant-containing parts that are joined in the field by other than companion or block valves.

(d) Unit System. A self-contained system which has been assembled and tested prior to its installation and which is installed without connecting any refrigerant-containing parts. A unit system may include factory-assembled companion or block valves.

R-1 Forms. Report of repair issued by the NBIC.

R-2 Forms. Report of alteration issued by the NBIC.

Repair. The work necessary to restore pressure-retaining items to a safe and satisfactory operating condition pursuant to the NBIC.

Routine Repair. Repairs for which the requirement for in-process involvement by the District Engineering Inspector or Authorized Inspector and stamping by the "R" Certificate Holder may be waived as determined by the Department and the District Engineering Inspector or Authorized Inspector in accordance to the NBIC and documented on an R-1 Form as a "Routine Repair" under the Remarks section.

"R" Certificate Holder. An organization in possession of a valid "R" Certificate of Authorization issued by the National Board pursuant to the NBIC.

Serious Injury/Illness. A personal injury/illness that results in death, dismemberment, significant disfigurement, permanent loss of the use of a body organ, member, function,

or system, a compound fracture, or other significant injury/illness that requires immediate admission and overnight hospitalization and observation by a licensed physician.

Temporary Use Boiler. A portable boiler which is installed for not more than one year and which may or may not be installed inside a boiler room, temporary room, or temporary shed or without external covering.

Ton of Refrigeration. The removal of heat at a rate of 12,000 BTU/hr per 522 CMR 9.00 one ton of refrigeration is equal to one horse power.

1.03: Standards Adopted

The standards listed below are adopted and incorporated as part of 522 CMR 1.00. Boilers and Pressure Vessels constructed in accordance with the ASME standards or other recognized engineering standards in effect at the time of the manufacture shall be considered constructed in accordance with the following standards.

ANSI/ASHRAE

15-2010	Safety Standard for Refrigeration Systems
34-2010	Designation and Safety Classification of Refrigerants

ANSI/ASME Code for Pressure Piping, B31

B31.1-2010	Power Piping
B31.3-2010	Process Piping
B31.5-2010	Refrigeration Piping and Heat Transfer Components
B31.9-2011	Building Service Piping

ASME Boiler and Pressure Vessel Code, 2010 Edition (2011a Addenda)

Section I	Rules for Construction of Power Boilers
Section II	Materials • Part A – Ferrous Materials Specifications • Part B – Nonferrous Materials Specifications • Part C – Specifications for Welding Rods Electrodes and Filler Metals • Part D – Properties
Section III	Rules for Construction of Nuclear Facility Components
Section IV	Rules for Construction of Heating Boilers
Section VIII	Rules for Construction of Pressure Vessels
Section IX	Welding and Brazing Qualifications
Section X	Fiber-Reinforced Plastic Pressure Vessels
Section XI - Division 1	Rules for Inservice Inspection of Nuclear Power Plant Components

ASME CSD-1-2009 Controls and Safety Devices for Automatically Fired Boilers

The following standards are adopted by 522 CMR 1.00 and are available from the National Board.

National Board Inspection Code, 2011 Edition

Part 1	Installation
Part 2	Inspection
Part 3	Repairs and Alterations

1.04: Department Jurisdiction

(1) Enforcement. Pursuant to M.G.L. c 146, § 5, the Department shall enforce M.G.L. 146 and 522 CMR except when otherwise provided.

(2) District Engineering Inspectors may enter any premises pursuant to M.G.L. c. 146, §5.

(3) Inspection. A District Engineering Inspector shall perform the First Inspection of a Boiler or Pressure Vessel required by M.G.L. c. 146, §§ 6-7.

(a) Boilers. All Boilers and their Appurtenances, except those specified in M.G.L. c. 146, §7, which includes boilers of railroad locomotives, motor vehicles or steam fire engines brought into the Commonwealth for temporary use in times of emergency, nor to boilers used in private residences, nor to those used for heating purposes which carry pressures not exceeding fifteen pounds to the square inch and have less than four square feet of grate surface, nor to boilers of not more than three horse power, shall be thoroughly inspected externally and internally under the specifications of 522 CMR 2.00 and 522 CMR 4.00. Upon written application made to it by the Owner/User of a Pressure Vessel or Boiler, the Board may, when the public interest and convenience require, extend the time for the making of such inspection for a period not to exceed six months as the Board may determine.

(b) Air Tanks. All air tanks and their Appurtenances, except those specified in M.G.L. c. 146, §34 and 522 CMR 19.00, shall be thoroughly inspected externally and internally at least once every two years when the following criteria are met: (a) greater than 50 PSI; (b) greater than six inches internal diameter; and (c) greater than one cubic foot.

1.05: Variance Procedure

(1) Application. An Owner/User, or an Engineer in Charge may apply to the Chief for a variance from 522 CMR. In order for the Chief to approve a variance, the applicant must demonstrate that such a variance would not compromise public safety or otherwise undermine the purpose of 522 CMR. Application for a variance shall be made on a form approved by the Board for this purpose, and shall be signed by the applicant.

(2) Upon receipt of an application for variance, the Chief shall review the request and may either:

(a) Grant the variance as requested or with conditions that the Chief deems appropriate;
(b) Deny the variance request; or
(c) Commence an adjudicatory hearing before the Board to further review the variance request. Hearings will be held in accordance with the provisions of M.G.L. c. 30A and 801 CMR 1.02.

(3) Appeals. Any person aggrieved by the Chief's decision made without a hearing may file a request for an adjudicatory hearing with the Board. All adjudicatory hearings will be held by the Board in accordance with the provisions of M.G.L. c. 30A and 801 CMR 1.02 and shall be final. Any party aggrieved by a final decision made subsequent to the appeal hearing may file an appeal with the Superior Court pursuant to M.G.L. c. 30A, §14.

1.06: Inspection Extension Request Procedure

Application. Pursuant to M.G.L. c. 146, §6, an Owner/User or an Engineer in Charge may apply to the Board for an extension to the period in which an annual inspection must be completed. Such period shall not exceed six months.

(1) Application for an inspection extension shall be made on a form approved by the Board for this purpose, shall be signed by the applicant, and shall include a letter from an Authorized Inspector or, if not insured, a letter from a District Engineering Inspector. The letter shall provide guidance to the Board on the condition of the Boiler.

(2) Board Action. Upon receipt of an application, the Board shall review the request as soon as practicable and make a decision to either:

(a) Grant the extension as requested;
(b) Grant the extension with conditions;
(c) Deny the extension request; or
(d) Commence an adjudicatory hearing to further review the extension request. Hearings will be held in accordance with the provisions of M.G.L. c. 30A and 801 CMR 1.02.

(3) Appeals. Any person aggrieved by the Board's decision made without a hearing may file a request for an adjudicatory hearing with the Board. All adjudicatory hearings will be held in accordance with the provisions of M.G.L. c. 30A and 801 CMR 1.02 and be final. Any party aggrieved by a final decision made subsequent to the appeal hearing may file an appeal with the Superior Court pursuant to M.G.L. c. 30A, §14.

522 CMR 2:00: POWER BOILERS

2.01: Scope and Application

In accordance with the provisions of M.G.L. c. 146, § 2, the Board herewith adopts by reference the ASME Boiler and Pressure Vessel Code Section I, Rules for Construction of Power Boilers.

This ASME code is on file with the State Secretary.

2.02: Records

To ensure the proper daily inspection of steam boilers, the following shall apply:

(1) When an engineer or fireman states that they are "operating" steam boilers or steam engines, it is understood that during that time stated, they are actually engaged as an assistant to the person in charge and during their hours on duty, they are held responsible for the proper operation of the boilers and engines specified and their appurtenances. Operators of steam boilers shall complete and sign the Operator's Record Book, as provided for in M.G.L. c. 146, § 46A, on a daily basis. These records shall be made available to the District Engineering Inspector upon request.

(2) In the event of a Reportable Accident/Incident, the Owner/User or the Engineer in Charge shall notify the Massachusetts Emergency Management Agency at 508-820-1444 within 24 hours of the event.

(3) All Engineers and Firemen in charge of steam boilers and/or engines shall notify the Department in writing of the location of the boilers and/or engines of which they are in charge. When accepting or leaving a position as an engineer or fireman in charge, the engineer or fireman has seven calendar days to notify the Department.

(4) The Engineer in Charge is in actual authority for the daily operation and maintenance of the steam boilers or engines specified. All persons operating, repairing or maintaining these boilers or engines do so under the direct authority of the Engineer in Charge. In order to effectively perform their duties, the Engineer in Charge shall make daily visits to the plant. Individuals performing duties as the Engineer in Charge will leave daily instructions to the operating personnel and those instructions will be made available to the District Engineering Inspector upon request. The Engineer in Charge shall sign the Engineer's Record Book, as provided for in M.G.L. c. 146 § 51, on a daily basis. It is reasonable for the Engineer in Charge to perform their duties at the facility five days and to give written instructions to the personnel during the designated weekends.

2.03: Construction

(1) Heat Recovery Steam Generators (HRSG's). All heat recovery steam generators built after May 1, 2000, shall be built to the ASME Boiler and Pressure Vessel Code Section I, Rules for Construction of Power Boilers adopted at the time of installation.

(2) Restrictions, Dual Pressure Controls, Bypass Switches.

(a) Steam boilers under this section are prohibited from having any device that enables the boiler to operate at a pressure less than ten percent of its normal operating pressure. Dual pressure controls or any similar device are prohibited from use on all

steam boilers operating above 15 PSIG.
(b) Manual devices and switches that allow the bypass of any safety control are prohibited unless such device or switch is provided with a "dead-man" capability that ensures that the Operator is present and responsible when the device or switch is in use. No such device or switch shall have the capability to fail in the closed position.

(3) Remote Monitoring Systems. Steam boiler plants seeking to utilize remote monitoring systems must be configured in a manner that enables the Operator to see the remote monitoring device at all times. Such devices shall include, but not be limited to: pressure gauge/indicators, remote water level indicator, audible alarm(s), and an emergency shutdown switch.

2.04: Reconstruction including Welded Repairs, Major Repairs, Alterations

All reconstruction including Repairs and Alterations performed to bring the boiler to the original code of construction, as stamped on the boiler, shall be done in accordance with the provisions of M.G.L. c. 146, § 2 and NBIC Part 3 . It is the responsibility of the Engineer in Charge to ensure that any reconstruction is performed in accordance with this regulation.

2.05: Installation

In accordance with the provisions of M.G.L. c. 146, § 2, the Board herewith adopts the NBIC Part 1.

2.06: Inspection

In accordance with the provisions of M.G.L. c. 146, § 2, the Board herewith adopts NBIC Part 2.

(1) Application.
Whoever owns or uses or causes to be used a power boiler that comes within the scope of M.G.L. c. 146, § 6, shall make application for inspection to the Chief in a format approved by the Department. The Owner/User shall give their name and address and the location of the boiler, the designated Engineer in Charge, and any other information required by the Department.
(2) Field Inspection.
All power boilers shall be thoroughly inspected internally and externally while under pressure at least once annually in accordance with the NBIC. A District Engineering Inspector shall perform the First Inspection as required by M.G.L. c. 146, § 6. Subsequent annual inspections shall be performed by a District Engineering Inspector or an Authorized Inspector.. A thorough Internal Inspection requires the following:

(a) Each space, including but not limited to, fireside and waterside spaces provided with a handhole, manhole, or other points of access such as doorways and openings into fireside and waterside spaces shall be opened and cleaned for a visual inspection.
(b) Pre-inspection and post-inspection activities as provided for in the NBIC shall be performed.

(3) Certificate to be Posted.
If the boiler is found to comply with 522 CMR, the Department shall issue to the Owner/User of said boiler a Certificate, provided the appropriate fees have been paid. Pursuant to M.G.L. c. 146, § 8, the Certificate for a power boiler shall be protected from dirt, moisture, and contamination and shall be posted in a conspicuous place near where the boiler specified therein is located. The Certificate for a portable boiler shall be kept with said boiler and shall be always accessible to the District Engineering Inspector or Authorized Inspector.

The Certificate shall include the following in accordance with M.G.L. c. 146 § 27: the name of the Owner/User; the location, size, and number of the boiler; the date of inspection and the maximum pressure at which the boiler may be operated; the expiration date; and the name and signature of the District Engineering Inspector or Authorized Inspector.

The Certificate shall remain posted while the Certificate is in force, unless a District Engineering Inspector or an Authorized Inspector deems the boiler or its Appurtenances unsafe or dangerous. If a boiler is determined to be unsafe or dangerous, the District Engineering Inspector or Authorized Inspector shall remove the Certificate and the boiler or Pressure Vessel shall not be operated until such time that a valid Certificate is issued.

(4) Preparation of Inspection.
The boiler shall be prepared for inspection in accordance with the NBIC. The Engineer in Charge is responsible to ensure the boiler is properly prepared for inspection.

(5) Inspection Reporting.
Whoever owns or uses or causes to be used any boiler requiring inspection pursuant to M.G.L. c. 146, § 6, that person shall report to the Chief the location of such boiler the boiler is to be operated. Inspection reports shall be submitted to the Department in a format approved by the Department.

(6) Reporting by Insurance Companies.
Every insurance company shall forward to the Chief, within 14 days after each inspection, reports of all boilers inspected by Authorized Inspectors. Such reports shall be made on forms approved by the Chief and shall contain all orders made by the company regarding such systems.

All insurance companies shall notify the Chief, within 14 days, on the appropriate NBIC form, approved by the Chief, of all boiler new business or discontinuation of business. All insurance companies shall report immediately to the Chief the name of the Owner/User and the location of every boiler required to be inspected by M.G.L. c. 146, upon which they have cancelled or refused insurance, giving the reasons therefor.

2.07: General Requirements

(1) Pressure Tests.

(a) When there is doubt as to the extent of a defect of detrimental condition found in a Pressure Vessel, the District Engineering Inspector or the Authorized Inspector may require a pressure test. Such tests shall be performed in accordance with the NBIC.

(b) When the contents of the vessel prohibit contamination by any other medium or when a hydrostatic test is not possible, other testing media may be required by the District Engineering Inspector or Authorized Inspector provided that the precautionary requirements in the NBIC are adhered to.

522 CMR 3:00: POWER REACTION VESSELS & PIPING & UNFIRED PRESSURE VESSELS AS USED IN ATOMIC ENERGY INSTALLATIONS

3.01: Scope and Application

522 CMR 3.00 applies to all nuclear power reactor vessels and piping as well as unfired vessels used in atomic energy installations.

3.02: Construction

(1) In accordance with the provisions of M.G.L. c. 146, § 2, the Board herewith adopts by reference the ASME Boiler and Pressure Vessel Code Section III, Rules for the Construction of Nuclear Facility Components.

(2) 522 CMR 3.00 shall be applicable to the construction, installation and inspection of steam boilers, power reactor vessels, containment vessels, piping, reactor plant Appurtenances and unfired Pressure Vessels as used in atomic energy installations subject to the provisions of M.G.L. c. 146.

3.03: Installation

In accordance with the provisions of M.G.L. c. 146, § 2, the Board herewith adopts the NBIC Part 1.

3.04: Inspection, Repairs, and Alterations

In accordance with the provisions of M.G.L. c. 146 § 2, the Board herewith adopts the ASME Boiler and Pressure Vessel Code Section XI - Division 1, Rules for Inservice Inspection of Nuclear Power Plant Components, in addition to the NBIC Part 2 and Part 3.

3.05: Inspector and Records

(1) An Authorized Nuclear Inspector and Authorized Nuclear Inspector (Concrete) shall be on the site during the mechanical construction and testing phases of every nuclear reactor installation, its components, appurtenances, containment vessel and piping systems. The District Engineering Inspector may, from time to time, make such inspections as deemed appropriate.

(2) Permanent records shall be kept to maintain complete traceability of all material used in the construction of any nuclear reactor plant. These records shall include certificates of chemical and physical properties.

(a) Permanent records shall be kept at the plant site to maintain complete traceability of all welds that fall within the limits of Section III of the current edition of the A.S.M.E. Code that has been accepted and approved by the Board and the Commonwealth.

(b) Permanent records shall be maintained identifying all welders, and their qualifications, performing welds covered in 522 CMR 3.05(2)(a).

3.06: Miscellaneous Provisions

(1) The owner of a nuclear power plant shall provide a procedure by which all agency reports and data sheets shall be coordinated to the satisfaction of the Chief or his designee.

(2) Pressure Tests.

(a) When there is doubt as to the extent of a defect of detrimental condition found in a Pressure Vessel, the Authorized Nuclear Inspector may require a pressure test. Such test shall be performed in accordance with the NBIC and ASME Nuclear Vessels, Section III, Rules for the Construction of Nuclear Vessels.

(b) The maximum metal temperature is not to be more than 120° F unless the Authorized Nuclear Inspector agrees to a temperature higher than 120° F.

(c) When the contents of the vessel prohibit contamination by any other medium or when a hydrostatic test is not possible, other testing media may be required by the Authorized Nuclear Inspector provided that the precautionary requirements in the NBIC are adhered to.

522 CMR 4.00: HEATING BOILERS AND OTHER HEAT STORAGE SOURCES

4.01: Scope and Application

(1) In accordance with the provisions of M.G.L. c. 146, § 2, the Board herewith adopts the ASME Boiler and Pressure Vessel Code Section IV, Rules for Construction of Heating Boilers. This ASME code is on file with the State Secretary.

(2) Requirements. 522 CMR 4.00 shall apply to boilers exceeding 3 HP and restricted to the following services:

(a) steam heating boiler for operation having a capacity of more than 207 pounds of steam per hour output and a pressures not exceeding 15 psig (100 kPa).

(b) hot water heating boilers and hot water supply boilers for operation at pressures not exceeding 160 psig (1100kPa).

(c) hot water heating boilers and hot water supply boilers for operation at temperatures not exceeding 250˚F (120˚C), at or near the boiler outlet, except that

when some of the wrought materials permitted by ASME Code Section IV are used, a lower temperature is specified.

(d) potable-water heating boiler for operation at pressures not exceeding 160 psig (1100kPA) and water temperatures not exceeding 210ºF (99ºC). 522 CMR 4.01 (2)(d) shall not apply to units in this category when none of the following limitations are exceeded:

1. Heat input of 200,000 Btu/hr;
2. A water temperature of 210°F (99°C);
3. A nominal water-containing capacity of 120 gallons.

For services exceeding these limits, the rules of ASME Section I Code and 522 CMR 16.00 apply.

Boilers within the scope of 522 CMR 4.00 which were legally operating in the Commonwealth prior to the publication of 522 CMR 4.00 with the Secretary of the Commonwealth and which conformed to the existing installation rules may continue in such service.

4.02: Construction

All heating boilers under the scope of this section shall be initially constructed in accordance with the Section IV of the ASME Boiler and Pressure Vessel Code.

4.03: Reconstruction including Welded Repairs, Major Repairs, Alterations

All reconstruction including Repairs and Alterations performed to bring the vessel to the original code of construction, as stamped on the boiler, shall be done in accordance with the provisions of M.G.L. c. 146, § 2, NBIC Part 3, and Section IV of the ASME Boiler and Pressure Vessel Code.

4.04: Installation

In accordance with the provisions of M.G.L. c. 146, § 2, the Board herewith adopts the NBIC Part 1.

4.05: Inspection

In accordance with the provisions of M.G.L. c. 146, § 2, the Board herewith adopts the NBIC Part 2.

(1) Field Inspection. All hot water heating boilers and heat storage sources constructed with manholes or hand holes under this section, except those listed as exempt in section 4.05(2), below, shall be thoroughly inspected externally at least once a year:

(a) Heating boilers constructed with manholes or hand holes shall be inspected internally at least once every three years;

(b) Steam heating boilers constructed with manholes and hand holes shall be inspected internally at least once a year.

The First Inspection for the installation of a water boiler or heat storage source covered by this section may be made by either a District Engineering Inspector or by an Authorized Inspector. The first part of the inspection on steel field erected boilers shall be completed before the system is filled with the fluid to be heated.

The First Inspection for the installation of a steam boiler covered by this section shall be made by a District Engineering Inspector.

(2) Exempt from Inspection. The following heating boilers must be constructed in accordance with this regulation, but are exempt from required inspections:

(a) Boilers of railroad locomotives, motor vehicles or steam fire engines brought into the Commonwealth for temporary use in times of emergency;
(b) Boilers used in private residences;
(c) Boilers used for heating purposes which carry pressures not exceeding 15 PSI and have less than 4 square feet of grate surface;
(d) Boilers of not more than 3 horsepower (100,425 BTU/hr) used for heating purposes;
(e) Boilers under the jurisdiction of the United States Federal Government;
(f) Boilers used exclusively for horticultural or agricultural purposes.

(3) Certificate to be Posted.

If the boiler is found to comply with 522 CMR, the Department shall issue to the Owner/User of said boiler a Certificate, provided that all of the required fees have been paid. Pursuant to M.G.L. c. 146, § 8, the Certificate for a power boiler shall be protected from dirt, moisture, and contamination and shall be posted in a conspicuous place near where the boiler specified therein is located. The Certificate for a portable boiler shall be kept with said boiler and shall be always accessible to the Authorized Inspector and District Engineering Inspector.

The Certificate shall remain posted while the Certificate is in force, unless an Authorized Inspector or District Engineering Inspector deems the boiler or its Appurtenances unsafe or dangerous. If a boiler is determined to be unsafe or dangerous, the Authorized Inspector or District Engineering Inspector shall remove the Certificate and the boiler or Pressure Vessel shall not be operated until such time that a valid Certificate is issued.

(4) Application.

Whoever owns or uses or causes to be used a heating boiler that comes within the scope of M.G.L. c. 146, § 6, shall make application for inspection to the Chief in a format approved by the Department.

(5) Preparation of Inspection.

The Owner/User of a boiler which requires an Internal Inspection by a District Engineering Inspector or an Authorized Inspector shall prepare the boiler for inspection by cooling (blanking off connections to adjacent boilers, if necessary); removing all soot and ashes from tubes, heads, shell, furnace and combustion chamber; drawing off the water; removing the handhole and manhole plates; removing grate bars from internally

fired boilers; and removing the steam gauge for testing as well as following Part 2 of the NBIC.

If a boiler has not been properly cooled or otherwise prepared for inspection, the District Engineering Inspector or Authorized Inspector shall decline to inspect the boiler until the boiler has been properly prepared.

(6) Inspection Reporting.
Whoever owns or uses or causes to be used any boiler requiring inspection pursuant to M.G.L. c. 146, § 6, shall report to the Chief the location of such boiler which is to be operated. Inspection reports shall be submitted to the Department in a format approved by the Department.

(7) Reporting by Insurance Companies.
Every insurance company shall forward to the Chief, within 14 days after each inspection, reports of all boilers inspected by Authorized Inspectors. Such reports shall be made in a format approved by the Department and shall contain all orders made by the company regarding such systems.

All insurance companies shall notify the Chief, within 14 days, on the appropriate NBIC form, approved by the Chief, of all boiler new business or discontinuation of business. All insurance companies shall report immediately to the Chief the name of the Owner/User and the location of every boiler required to be inspected by M.G.L. c. 146, upon which they have cancelled or refused insurance, giving the reasons therefore.

The Authorized Inspector shall notify the Chief or his designee immediately if the Authorized Inspector finds that an unsafe and dangerous condition exists resulting in the removal of the Certificate.

(8) Massachusetts Heat Boilers.
Massachusetts Heat Boilers, Inspection and Stamping. Mass. Heat Boilers shall be inspected during construction by a National Board Commissioned Inspector.
Each boiler shall be stamped MASS. HEAT and shall display the following data:

(a) Manufacturer's name;
(b) Maximum allowable working pressure;
(c) Safety valve relieving capacity (minimum) in pounds per hour;
(d) MASS. HEAT number; and
(e) Year built.

(9) Frequency of Inspection. Low Pressure Heating Boilers constructed with manholes or hand holes shall be inspected as follows:

(a) Steam Power Boilers. Annual external inspection which shall include an Internal inspection.

(b) Hot Water Boilers. Annual external with an internal once each three years The External Inspection may be made in conjunction with the Internal Inspection.

(10) Installation of Used Boilers in the Commonwealth.
Whoever owns and operates a Boiler not in the Commonwealth which was not shop inspected and stamped in accordance with the Code, but bears the stamping of another state or political subdivision which has adopted a standard of construction equivalent to that of Massachusetts, and wishes to operate said steam boiler within the Commonwealth, may petition the Chief for permission to do so. Such petition shall be accompanied by the following:

1. a copy of the original data report of the manufacturer of the Boiler, signed by an inspector with the appropriate commission who made the original shop inspection; and

2. the field inspection data sheet and report covering the inspection of the Boiler, signed by an inspector with the appropriate commission.

If upon review of this information, the Chief or his designee finds that the boiler complies with the Massachusetts requirements with regard to material, construction and workmanship, and further finds that the boiler is in safe working condition and equipped with all necessary appendages, the Chief or his designee shall cause to be issued a Certificate establishing the safe working pressure.

(11) Boiler Horsepower.
When liquid or gaseous fuel, electric or atomic energy or any other source of heat is used the horsepower of a boiler shall be determined by either the manufacturer's factory tag affixed to the boiler (ASME Code Stamping) or burner denoting horsepower, or by calculated by one of the following formulae: the steam output capacity as listed on the manufacturer's tag divided by 34.5, the BTU/hr input listed on the manufacturer's tag divided by 41,840 or the BTU/hr output listed on the manufacturer's tag divided by 33,475.

If a tag is missing, damaged or unclear, the Owner/User shall obtain a notarized letter, signed by an officer of the manufacturer of the boiler or burner, listing the maximum capacity of the steam boiler in BTU/hr. Such letter shall be an acceptable basis for calculating the horsepower of that particular steam boiler. If the manufacturer is out of business, or is otherwise unable or provide such information, a letter from a registered PE will be acceptable and a new data plate will be affixed to the boiler proper.

The minimum relieving capacity of the pressure relieving device shall be based on the stamping required by the applicable ASME Code.

(12) Atmospheric Boilers. Boilers that are vented directly to the atmosphere, where it is not possible for the boiler to build up any pressure above atmospheric pressure, shall be exempt from this regulation provided they do not have any valves, flaps, louvers, dampers in the vent line which could have the capacity to freeze in place, thereby causing the boiler to build pressure. Any atmospheric boiler that has such valve, flap, louvers, dampers or any Appurtenance that can result in a blockage of the vent line shall be constructed in accordance with the ASME Code as adopted in this section.

(13) Shutdown Switches and Circuit Breakers. A manually operated remote heating plant automatic shutdown device, including but not limited to, a shutdown switch or circuit breaker, shall be located adjacent to the boiler room door, marked for easy identification. Consideration should also be given to the type and location of the switch to safeguard against tampering. In the event that the boiler room door is located on the building exterior, the shutdown device shall be located adjacent to the interior of the door. Where entrance may be gained to the boiler room through two or more separate doors, each door shall be outfitted with a shutdown device adjacent to the door. Alternate locations of remote emergency switch(es) may be approved by the Board through the variance process in 522 CMR 1.04.

522 CMR 5.00: REPEALED

522 CMR 6.00: RESERVED

522 CMR 7.00: AIR TANKS

7.01: Scope

In accordance with the provisions of M.G.L. c. 146, § 2, the Board herewith adopts by reference the ASME Boiler and Pressure Vessel Code Section VIII, Rules for Construction of Pressure Vessels.

(1) 522 CMR 7.00 shall apply to all air tanks enumerated in M.G.L. c. 146 § 34 including the following:

(a) Tanks hereafter constructed.

(b) Tanks used for the storage of one cubic foot capacity or more of compressed air and at a pressure exceeding 50 p.s.i. and having an inside diameter of greater than six inches.

The exemption of tanks containing less than one cubic foot of air applies to each single vessel and not to an assembly of vessels.

(2) 522 CMR 7.00 shall not apply to the exceptions enumerated in M.G.L. c. 146 § 34 including the following:

(a) Tanks subject to Federal control.

(b) Tanks attached to locomotives, street cars, railway cars, trackless trolley vehicles, or to motor vehicles for use in operating such vehicles or their brakes or body lifting apparatus.

(c) Tanks in which air is used solely for cushioning systems containing water or other liquids.

(d) Tanks containing air and liquids in which the pressure is maintained by pumps; for example, hydraulic elevator tanks.

(e) A tank or other receptacle used by divers if such tank or other receptacle is inspected by the refilling agency.

(f) Portable tanks and bottles containing compressed as used for breathing purposes while combating fires or used in rescue operations in contaminated areas; and storage tanks and mechanical filling systems used to fill such portable tanks and bottles.

(g) Tanks used in and as part of electrical substations owned and operated by electric company, as defined M.G.L. c. 164, §1.

7.02: Construction

All air tanks under the scope of this section shall be initially constructed in accordance with the Section VIII of the ASME Boiler and Pressure Vessel Code.

7.03: Installation

(1) All tanks shall be available for complete External Inspection and shall be so installed that there will be not less than 12 inches between the tank and any floor, wall, ceiling or other obstruction, except where a tank is attached to a portable compressor by means of straps and is removable for complete inspection. The 12 inch clearance may be waived by the District Engineering Inspector. The District Engineering Inspector shall document in their report that there was not a clearance of 12 inches but a complete External and Internal Inspection could be made. The name plate, safety valve, drain, pressure gauge and inspection openings must be readily visible and accessible if the clearance requirement is to be waived.

(2) In case of vertical tanks the bottom head if dished must have the pressure on the concave side to ensure complete drainage.

7.04: Inspections and Certificates

(1) Field Inspection.

(a) All first Certificate inspections must be performed by a District Engineering Inspector before the tank is put into service. All tanks except those listed on 522 CMR 7.01(2) shall be inspected internally biennially thereafter by either by a District Engineering Inspector or an Authorized Inspector.

If the installation is found to comply with 522 CMR 7.00, the Department shall issue a Certificate stating the pressure at which the tank will be permitted to operate.

(b) Every tank which has been inspected by a District Engineering Inspector shall be given a Massachusetts number upon a metal tag wired to the tank and secured with a lead seal.

(2) Ultrasonic Inspections.

Ultrasonic thickness determination shall be permitted in lieu of, or in conjunction with, Internal Inspection for Air Tanks or other receptacles of 36 inches diameter or less. Thickness measurements shall be made in at least eight areas: two on each head and two on both the top and bottom portions of the shell. Thickness determinations indicating significant reduction in material thickness over a general area shall be shown on the inspection report, as well as calculations for the reduction in allowable working pressure. A hydrostatic test shall be applied if required by the Authorized Inspector or District Engineering Inspector. The pressure applied during the test shall be equal to one and one half times the pressure allowed on the air tank or other receptacle. A hammer test may also be applied if there is no pressure on the tank or receptacle.

A significant reduction in material is a reduction in material thinner than the minimum allowable thickness. If the thickness is reduced below the minimum allowable thickness, the vessel must either be repaired to bring the vessel to at least the minimum thickness or the maximum allowable pressure reduced based upon the new actual thickness minus the corrosion rate expected between inspections. The NBIC shall be used in determining the corrosion rate.

The examiner's signed report and the Authorized Inspector's inspection report shall be submitted in a format approved by the Department.

(3) Certificate to Be Posted. If the Air Tank is found to comply with 522 CMR, the Department shall issue to the Owner/User of said vessel a Certificate, provided the appropriate fees have been paid. Pursuant to M.G.L. c. 146, § 34, the Certificate for an Air Tank shall be protected from dirt, moisture, and contamination and shall be posted in a conspicuous place near where the tank specified therein is located. The Certificate for a portable Air Tank shall be kept with said Tank and shall be always accessible to the inspector. No Certificate shall be removed there from while the Certificate is in force unless the tank or its appendages becomes defective. In that case, it shall be removed by either a District Engineering Inspector , or an Authorized Inspector.

(4) Riveted Air Tanks. In determining the maximum allowable working pressure on the shell of lap-riveted Air Tanks over ten years old, lowest factor of safety to be used shall be as follows:

(a) 5.5 for tanks over ten and not over 15 years old
(b) 5.75 for tanks over 15 and not over 20 years old.
(c) 6 for tanks over 20 years old.

Stamping shall comply with Section VIII.

No piping, drains, safety valves, pressure gauges or other Appurtenances shall be connected to threaded openings required for inspection and cleanout purposes. Flanged and/or threaded connections from which piping, instruments, or similar attachments can

be removed may be used in place of the required inspection openings in accordance with Section VIII of the ASME Boiler and Pressure Vessel Code.

7.05: Pressure Relief Valves

(1) All pressure relief valves on air tanks must conform to the ASME and National Board Codes as adopted by this regulation.

(2) A pressure relief valve constructed in accordance with 522 CMR for use with steam may be used for air and its capacity in terms of cubic feet of air per minute shall be found by using the following: when not over three inch size and having a capacity in pounds per hour marked on it by the maker, may be used for air and its capacity in terms of cubic feet of free air per minute shall be found by multiplying the capacity in pounds of steam per hour by .325. This rule shall only apply when the pressure relief valve is set to blow at a pressure not lower than that marked in it by the manufacturer of the valve.

(3) All tanks, the contents of which are likely to cause interference with the operation of a pressure relief valve if attached directly to the tank, shall have the pressure relief valve connected in such a manner as to avoid such interference. Intercoolers and aftercoolers shall not be classed as primary vessels but shall be protected by adequate pressure relief valves.

(4) When the pressure relief valve covered by this regulation is exposed to the elements and freezing temperatures they shall be located on the discharge pipe from the compressor as near to the compressor as practical.

7.06: Gauges, Drains, and Saddles

(1) Pressure Gauge.

(a) Every air compressor system shall have a pressure gauge connected in a manner that the pressure gauge cannot be shut off from the tank except by a cock with T or lever handle, which shall be placed on the pipe near the pressure gauge. Gauge connections shall be of brass pipe and fitting or copper tubing so connected to the system that they will not be exposed to high temperatures due to compression. The minimum copper tubing size used shall be 1/8".

(b) The dial of the pressure gauge shall be graduated to not less than one and one half times the maximum pressure allowed on the tank.

(2)Test Gauge Connection.

(a) Each air compressor system shall be provided with a 1/4 inch pipe size connection for attaching the test gauge when the system is in service, so that the accuracy of the pressure gauge can be ascertained.

(b) The calibrated test gauge connection shall consist of a 1/4 inch pipe size brasscock with T or lever handle and female thread and shall be connected to the pressure gauge piping in such a manner that nothing shall obstruct the attachment of the test gauge while the tank is in service.

(3) Bottom Drain Pipe. Each tank shall have a bottom drain pipe fitted with a valve or cock, of the straightway type, in direct connection with lowest water space practicable. The minimum size of pipe and fittings shall be 1/2 inch except for tanks 20 inches in diameter or less, in which the minimum size of such pipe and fitting shall be 1/4 inch iron pipe size. If a plug cock is used, the plug shall be held in place with a guard or gland.

7.07: Welded Repairs, Major Repairs, Alterations

No Repairs or Alterations shall be done by the welding process without the prior approval of an Authorized Inspector. All reconstruction including Repairs and Alterations performed to bring the vessel to the original code of construction shall be done in accordance with the NBIC.

In no case shall heat be used to bring the metal to a dull red color around an inspection or other opening for removing threaded attachments.

522 CMR 8.00: RESERVED

522 CMR 9.00: REFRIGERATION AND AIR CONDITIONING SYSTEMS

9.02: Scope

(1) Scope. The application of 522 CMR 9.00 is intended to ensure the safe design, construction, installation, operation and inspection of every refrigeration and air conditioning system that comes within scope of M.G.L. c. 146 § 45A.

(2) Purpose. The purpose of 522 CMR 9.00 is to provide reasonable safety for life, limb, health and property by adopting such rules and regulations in accordance with nationally recognized standards of engineering practice which will properly influence future progress and development in refrigeration and air conditioning systems.

(3) Requirements. The requirements of 522 CMR 9.00 shall apply to all refrigeration and air conditioning systems and appurtenances that come within the scope of M.G.L. c. 146, § 45A including the following:

(a) Systems in railway trains;

(b) Systems in motor vehicles;

(c) Systems in private residences;

(d) Systems in apartment houses of less than five apartments;

(e) Systems under the jurisdiction of the United States Government;

(f)Agricultural, horticultural or floricultural purposes; and

(g) Systems having less than 20 tons capacity unless such system has been inspected by the Division and a Certificate has been issued therefor or unless such system is insured by and subject to periodical inspection by a company authorized to insure Pressure Vessels in the Commonwealth and a Certificate has been issued therefor.

(4) Exceptions. In cases of practical difficulty or unnecessary hardship, the Board may grant exceptions from the literal requirements of 522 CMR 9.00, or permit the use of other devices or methods through the variance process in 522 CMR 1.04 when it is clearly evident the equivalent protection is thereby secured.

(5) Existing Installations. The following rules apply to all refrigeration and air conditioning systems which were in use or installed ready for use prior to the date upon which the rules adopted by the Board in accordance with the provisions of St. 1963 c. 561 as amended by St. 1971 c. 570 became effective. All existing installations shall be equipped with pressure relief devices as are required by ASHRAE 15. Any modifications made to existing systems shall be in accordance with the rules for new installations.

(6) Field Inspections. All first Certificate inspections must be performed by an Authorized Inspector or a District Engineering Inspector before the refrigeration and air conditioning systems are put into service. Field inspections of refrigeration and air conditioning systems in Massachusetts shall be made annually thereafter by a District Engineering Inspector or an Authorized Inspector.

9.02: Construction

All Refrigeration Systems under the scope of this section shall be initially constructed in accordance with the ASHRAE 15 standard.

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9.03: Installation

In accordance with the provisions of M.G.L. c. 146, § 2, the Board herewith adopts the ASHRAE 15 Safety Standard for Refrigeration Systems and ASHRAE 34 Designation and Safety Classification of Refrigerants for the installation of Pressure Vessel in Refrigeration Systems.

9.04: Inspection

(1) Requirements for Inspection.

Whoever owns or uses or causes to be used a refrigeration or air conditioning system that comes within the scope of M.G.L. c. 146, § 45A, shall make application for inspection to the Chief on forms furnished by the Department. The Owner/User shall give their name and address and the location of the refrigeration or air conditioning system, along with any other information required by the Department, and return same to the Department. The minimum fee for each inspection made by the Division under 522 CMR 9.01 shall be set according to the fee schedule as set forth by the Commissioner of Administration and Finance in 801 CMR 4.02.

(2) Annual Inspections.
When a refrigeration or air conditioning system is installed, a field inspection shall be made before it is put into service and the refrigeration or air conditioning system shall be inspected annually thereafter by the Authorized Inspector or District Engineering Inspector.

(3) Prescribed Pressure.
A refrigeration or air conditioning system shall not be operated in excess of the prescribed pressure. If the refrigeration or air conditioning system is constructed and installed in accordance with the rules prescribed by the Board, the District Engineering Inspector or Authorized Inspector shall issue a Certificate stating the maximum pressure at which the system will be permitted to operate.

(4) Massachusetts Tag Number.

(a)Every refrigeration or air conditioning system which has been inspected by the Division shall be given a serial number upon a metal tag together with a symbol representing the seal of the Commonwealth . The tag shall be held by non-ferrous wire in a conspicuous place on the unit and no person except a District Engineering Inspector shall remove the tag.

(b) Authorized insurance companies shall be furnished tag numbers by the Chief for refrigeration and air conditioning systems. The authorized insurance companies shall furnish their own tags upon which shall be the tag number. The dimensions of the tag shall be that authorized by the Board. The minimum size of the dies for stamping the tag shall be 5/16".The tag shall be made of non-ferrous metal and attached in a conspicuous place on the unit.

(5) Certificate to Be Posted.

The Certificate for a refrigeration or air conditioning system shall be posted and protected from dirt, water, and other deleterious effects in a conspicuous place near the compressor of the refrigeration or air conditioning system specified therein. It shall not be removed therefrom while the Certificate is in force, unless the system or its Appurtenances becomes defective, when it shall be removed by a District Engineering Inspector or Authorized Inspector.

(6) Reports of Insurance Companies.

Every insurance company shall forward to the Chief within 14 days after each inspection reports of all refrigeration or air conditioning systems inspected by it. Such reports shall be made in a format approved by the Chief and shall contain all orders made by the company regarding such systems.

(7) Insurance Company Reporting.

Insurance companies shall report new, canceled or suspended risks. All insurance companies shall notify the Chief within 14 days in a format approved by the Chief of

all refrigeration and air conditioning system risks written, canceled, not renewed or suspended because of unsafe conditions.

(8) Welding.

All welding done on any Refrigeration System or piping covered by 522 CMR 9.00 shall be performed by a welder qualified according to Section IX of the ASME Code.

(9) Electrical.

A person holding a license as a refrigeration technician may connect or disconnect for the purpose of installation, Alteration, Repair or replacement, any device or control required by rules and regulations of the Board to be a part of a refrigeration or air conditioning installation, or being an integral part of the refrigeration or air conditioning equipment at the connection on such device, control or part to be repaired or replaced, from the first disconnect in. The first disconnect is the wall plug or nearest electrical disconnect to the refrigeration or air conditioning equipment. All electrical work shall be in accordance with the Massachusetts Electrical Code.

(10) Plumbing.

An individual who is licensed in compliance with M.G.L. c. 146 § 85 as a refrigeration technician may connect or disconnect for the purpose of alteration, repair or replacement of controls downstream of the equipment gas shutoff valve any device or control that is regulated by 522 CMR or is an integral part of the refrigeration or air conditioning equipment. All fuel gas piping shall be installed by said licensed technician in compliance with 248 CMR 3.00 through 11.00.

522 CMR 10.00: MATERIAL SPECIFICATIONS

10.01: Scope and Application

(1) In accordance with the provisions of M.G.L., c. 146, § 2, the Board herewith adopts by reference the ASME Boiler and Pressure Vessel Code Section II, Materials, Parts A, B, C, and D.

(2) These Material Specifications shall be applicable to the manufacture and construction of all steam boilers, nuclear vessels and piping, and unfired pressure vessels subject to the provisions of M.G.L. c. 146.

522 CMR 11.00: WELDING SPECIFICATIONS

11.01: Scope and Application

(1) In accordance with the provisions of M.G.L. c. 146, §§ 2 and 35, the Board herewith adopts by reference the ASME Boiler and Pressure Vessel Code Section IX, Welding and Brazing Qualifications.

(2) These Standards shall be applicable to all steam boilers, nuclear vessels and piping, and unfired Pressure Vessels subject to the provisions of M.G.L. c. 146.

522 CMR 12.00: FIBERGLASS-REINFORCED PLASTIC PRESSURE VESSELS

12.01: Scope and Application

(1) In accordance with the provisions of M.G.L. c. 146, § 2, the Board herewith adopts by reference the ASME Boiler and Pressure Vessel Code Section X, Fiber-Reinforced Plastic Pressure Vessels.

(2) 522 CMR 12.00 shall be applicable to the Construction, Fabrication, Qualifying Designs and Procedures, Testing, Inspection, Marking, Stamping and Reports of Fiberglass-Reinforced Plastic Pressure Vessels as used for the storage of compressed air and gases used for refrigeration, subject to the provisions of M.G.L. c. 146.

522 CMR 13.00: RESERVED

522 CMR 14.00: RESERVED

522 CMR 15.00: NATIONAL BOARD INSPECTION CODE

15.01: Scope and Application

(1) In accordance with the provisions of M.G.L. c. 146 § 2, the Board adopts the NBIC as formulated and published, as it directly relates to Boilers, Pressure Vessels and their Appurtenances.

(2) The NBIC applies to the inspection, installation, and alteration or repair of Boiler and Pressure Vessels.

(3) The duties of the National Board Commissioned Inspector do not include the installation's compliance to other standards (environmental, construction, electrical, undefined industry standards) for which other regulatory agencies have authority and responsibility to oversee. See NBIC Part 1 1.4.1.

(4) Hydrostatic / Pressure Test Requirements. All Repairs and Routine Repairs shall be pressure tested. The District Engineering Inspector or Authorized Inspector shall be consulted and approve the pressure that is to be applied. Air or compressed gas pressure tests shall not be acceptable without the approval of the Chief or his designee. A vacuum test may be permitted if authorized by the inspector.

(5) Inspector Presence. If the District Engineering Inspector or Authorized Inspector cannot be present during a Routine Repair, the District Engineering Inspector or Authorized Inspector may waive the in process involvement on a case by case basis, provided the District Engineering Inspector or Authorized Inspector delegates the inspection responsibilities to the Engineer in Charge or the Owner/User's designee, and the "R" Certificate Holder determines that the routine repairs are acceptable to the Department where the pressure-retaining item is installed. The District Engineering Inspector or Authorized Inspector must document the reason for his lack of involvement on the R-1 form under the Remarks section. The Engineer in Charge or the Owner/User's designee shall provide meaningful results to verify the integrity of the Routine Repair, as determined by the District Engineering Inspector or Authorized Inspector. If the in-process involvement is waived by the District Engineering Inspector or Authorized Inspector, the Engineer in Charge or the Owner/User's designee must witness the final inspection. The District Engineering Inspector or Authorized Inspector, with the knowledge and understanding of jurisdictional requirements, shall be responsible for meeting jurisdictional requirements and the requirements of the NBIC.

(6) Routine Repairs. Routine repairs shall be as defined in the NBIC.

522 CMR 16.00: CONTROLS AND SAFETY DEVICES FOR AUTOMATICALLY FIRED BOILERS (ASME CODE CSD-1-2009)

16.01: Scope and Application

(1) In accordance with the provisions of M.G.L. c. 146, § 2, the Board herewith adopts the ASME CSD-1-2009 Code for the Controls and Safety Devices for Automatically Fired Boilers.

(2) Requirements. 522 CMR 16.00 shall apply to boilers restricted to the following services:

(a) steam boilers over 3 HP constructed for pressures in excess of 15 psi.

(b) high-temperature water boilers exceeding 160 psig operating pressure and/or 250°F operating temperature.

(c) steam heating boilers for operation at pressures not exceeding 15 psi (100 kPa) having a capacity of more than 207 pounds of steam per hour

(d) hot water heating boilers and hot water supply boilers for operation at:

1. Pressures not exceeding 160 psi working pressure; or temperatures not exceeding 250˚F (120˚C), at or near the boiler outlet, except that when some of the wrought materials permitted by ASME Code Section IV are used, a lower temperature is specified.
2. Having a capacity of more than 200,000 BTU output of the boiler nozzle.

522 CMR 17.00: PIPING

17.01: Authorization

522 CMR 17.00 is authorized, formulated and adopted under M.G.L. c. 22, § 10A and c. 146, §§ 45A, 81 through 89.

17.02: Purpose

522 CMR 17.00 is necessary to protect the lives, property and public safety of the people of the Commonwealth, and to help in the conservation of our natural resources and environment, by the proper installation, modification, and disassembly for re-use of process piping systems and/or equipment used to generate energy, heat, cooling, manufactured products, and for the conveyance and storage for liquids, solids, industrial gases and chemical and petroleum products.

17.03: Limit of Jurisdiction

Process piping shall be deemed to include those systems used in the conveyance, storage, and processing of liquids, solids, and industrial type gases. Nothing in 522 CMR 17.00 shall be construed as applying to the Plumbing or Sprinkler Protection industries. However, specifically included as process piping systems shall be those industrial water and waste systems which have intervening equipment or devices (*e.g*. backflow preventers, tanks, pumps) prior to tying into a domestic or sanitary system.

17.04: Scope

All piping systems covered by 522 CMR 17.00 shall be constructed using the following standards:

For Power Piping: ANSI/ASME B31.1 The American National Standard Code for Power Piping. This is piping typically found in electric power generating stations, in industrial and institutional plants, geothermal heating systems, and central and district heating and cooling systems.

For Process Piping: ANSI/ASME B31.3 The American National Standard Code for Process Piping. This piping is typically found in petroleum refineries, chemical, pharmaceutical, textile, paper, semiconductor, and cryogenic plants, and related processing plants and terminals.

For Refrigeration Piping and Heat Transfer Components: ANSI/ASME B31.5 The American National Standard Code for Refrigeration Piping and Heat Transfer Components. This piping is typically used for piping refrigerants and secondary coolants.

For Building Services Piping: ANSI/ASME B31.9 The American National Standard Code for Building Service Piping. This piping is typically found in industrial, institutional, commercial, and public buildings, and in multi-unit residence, which does not require the range of sizes, pressures, and temperatures covered in B31.1.

522 CMR 19.00: PORTABLE BOILERS

19.01 Scope and Application.

This section applies to all portable boilers brought into the Commonwealth of Massachusetts for temporary use.

(1) The Owner/User of a portable boiler is responsible for ensuring their boiler is in compliance with this regulation.

(2) All portable boilers covered by M.G.L. c. 146 must conform to the construction rules of the ASME Code, Section I and Section IV as applicable.

(3) Any portable boiler brought into the Commonwealth from another jurisdiction shall be inspected as follows:

(a) The First Inspection for all steam boilers must be performed by a District Engineering Inspector and be issued a state number from the Department.

(b) Steam boilers which have previously received a Massachusetts First Inspection and assigned a state number must receive a full Internal Inspection before operation followed by an External Inspection under pressure by a District Engineering Inspector or an Authorized Inspector.

(4) Any portable boiler already in the Commonwealth may be moved to another location within the Commonwealth and issued a Certificate under the following conditions:

(a) Steam boilers have previously received a First Inspection by a District Engineering Inspector and assigned a State boiler number and;

(b) Steam boilers have been internally inspected by an Authorized Inspector or District Engineering Inspector within the past year and;

(c) An operational inspection under pressure is conducted by an Authorized Inspector or District Engineering Inspector before the Certificate is issued at that location.

(5) Hot water heating boilers must receive an External Inspection under pressure at the location of installation before a Certificate may be issued.

(6) The Certificate is only valid for the location at which the boiler is placed into operation. Once the boiler is moved the Certificate is no longer valid.

(7) The company is required to notify the Department in a format approved by the Department in advance or as soon as practicable when they are bringing a portable boiler into the Commonwealth or moving a boiler to a new location.

(8) High Pressure boilers shall be trimmed to meet the following requirements:

The discharge from the blowdown systems (bottom, surface, or LWCOs) must be directed to either a blow down tank on the portable trailer or hard piped to a blow down tank at the location.

(9) High Pressure boilers must have certification for the boiler external piping as defined in the ASME Section I Code. This could be documented as follows:

(a) On the boilers National Board Data Report Forms;
(b) Stamped on the PP Piping;
(c) On a name plate attached to the boiler or PP Piping; or
(d) With manufacturers documentation demonstrating that the piping or hoses comply with the maximum pressure and temperature ratings of the boiler.

(10) Low pressure boiler shall have the blow down systems directed to a point of safe discharge. Discharging directly to the parking lot is not acceptable.

(11) In cases where the boiler may be set up for multiple controls (high and low pressure operation), only one set of controls may be physically connected to control the burner. All other controls must be physically disconnected and removed. A change of service from High Pressure to Low Pressure or Low Pressure to High Pressure requires a re-inspection and a new Certificate and safety valve will be changed to reflect the proper MAWP.

(12) Installed boiler controls must be designed for the intended range of operation. High Pressure controls shall not be reset to function as Low Pressure controls.

(13) Boilers being stored in another jurisdiction shall not be issued a Certificate. The Certificate can only be issued while the boiler is at a specific location connected and ready for use in the Commonwealth.

(14) Where required by M.G.L. c. 146 and 522 CMR, the appropriate license for the Engineer in Charge of the portable boiler must be posted on site.

(15) The location of installation should be noted in the inspection form under “location”.